1   1. A method of determining reliability with regard to a first factor which is dependent on a set
2   of at least two second factors, each of the second factors being diversely subject to a third
3   factor, data concerning the second factors being stored in storage accessible to a processor and
4   the method comprising the steps performed in the processor of:
5   using the data to determine correlations between second factors with regard to the third
6   factor;
7   using the correlations in determining a standard deviation of the third factor for the set;
8   and
9   using the first factor and the standard deviation in determining a reliability with regard
10 to the first factor.

1   2. The method set forth in claim 1 wherein the step of using the correlations comprises the
2   steps of:
3   determining a standard deviation for each of the second factors with regard to the third
4   factor;
5   using the correlations and the standard deviations for the second factors in determining
6   covariances between the second factors with regard to the third factor; and
7   using the covariances in determining the standard deviation of the third factor for the
8   set.

1   3. The method set forth in claim 1 wherein:
2   there is a plurality of the third factors.

1   4. The method set forth in any one of claims 1 through 3 wherein:
2   the set of at least two second factors is a set of uses of a resource, each use in the set
3   having a return;
4   the first factor is a valuation for the entire set of uses; and
5   the third factor is a risk which is diverse with regard to the returns from the uses .

1   5. The method set forth in claim 4 wherein:

2   the uses in the set are classes of assets and the resource is funds for investment in the

3   classes of assets.

1   **6.** The method set forth in any one of claims 1 through 3 wherein:

2   the processor performs the steps of the method as part of an optimization of the first

3   factor; and

4   the reliability is used as a constraint in the optimization.

1   **7.** The method set forth in claim 6 wherein:

2   the set of at least two second factors is a set of uses for a resource, each use in the set

3   having a return;

4   the first factor is a valuation for the entire set of uses; and

5   the third factor is a risk which is diverse with regard to the returns from the uses.

1   **8.** The method set forth in claim 7 wherein:

2   the uses are classes of assets and the resource is funds to be invested in the classes.

1   **9.** The method set forth in claim 8 wherein:

2   the optimization optimizes the valuation by varying the percentages of the resource

3   used for the assets in the classes.

1   **10.** The method set forth in claim 8 wherein:

2   the valuation is computed using real option techniques.

1   **11.** A method of optimizing a first factor which is dependent on a set of at least two second

2   factors, each of the second factors being diversely subject to a third factor, data concerning the

3   second factors being stored in storage accessible to a processor and

4   the method comprising the steps performed in the processor of:

5   finding a particular configuration of the set of second factors that optimizes the first

6   factor; and

7   employing a constraint during the step of finding the particular configuration that

8   specifies a reliability of the first factor with regard to the third factor which must be satisfied

9   by the particular configuration.

10

1 **12.** The method set forth in claim 11 wherein:

2   there is a plurality of the third factors.

1 **13.** The method set forth in claim 11 further comprising the steps of:

2   using the data to determine correlations between the second factors with regard to the

3 risk; and

4   using the correlations and the particular configuration to determine reliability of the

5 first factor for the particular configuration.

1 **14.** The method set forth in claim 13 wherein the step of using the correlations further

2 comprises the steps of:

3   using the correlations in determining a standard deviation of the third factor for the

4 particular configuration; and

5   using the first factor for the particular configuration and the standard deviation therefor

6 in determining the reliability of the first factor.

15. The method set forth in claim 14 wherein the step of using the correlations in determining
a standard deviation of the third factor for the particular configuration further comprises the
steps of:

10   determining a standard deviation for each of the second factors with regard to the third
factor; and

        using the correlations and the standard deviations for the second factors in determining
covariances between the second factors with regard to the third factor; and

        using the covariances and the particular configuration in determining the standard

15 deviation of the particular configuration.

1 **16.** The method set forth in any one of the claims 11 through 15 wherein:

2   the set of at least two second factors is a set of uses of a resource, each use in the set

3 having a return;

4   the first factor is a valuation for the entire set of uses; and

5   the third factor is a risk which is diverse with regard to the returns from the uses.

1 **17.** The method set forth in claim 16 wherein:

18

2   the uses in the set are classes of assets.

1   **18.** The method set forth in claim 16 wherein:

2   valuations for the set of uses are found using real option techniques.

1   **19.** A method of allocating investment funds among a set of at least two asset classes to

2 optimize valuation of the asset classes over a period of time, data concerning the asset classes

3 being stored in storage accessible to a processor and the method comprising the steps

4 performed in the processor of:

5   employing a linear optimization program to optimize the valuation and

6   in the linear optimization program, using a real option function to determine valuation

7 for each asset class over the period of time for a particular allocation of the funds to the asset

8 class.

1   **20.** The method set forth in claim 19 wherein:

2   the data concerning the asset classes further indicates for each asset class a risk over the

3 period of time and the method further comprises the step of:

4   employing a constraint in the linear optimization program that specifies a reliability of

5 a return for the portfolio for a particular allocation of funds to the asset classes in the set.

1   **21.** The method set forth in claim 20 wherein:

2   there is a plurality of risks.

1   **22.** The method set forth in claim 20 further comprising the steps of:

2   using the data to determine correlations between the asset classes with regard to the

3 risks of the asset classes; and

4   using the correlations and the particular allocation of funds to determine the reliability

5 of the return for the portfolio.

1   **23.** The method set forth in claim 22 wherein the step of using the correlations further

2 comprises the steps of:

3   using the correlations in determining a standard deviation of the risk for the particular

4 configuration; and

5   using the return for the particular allocation of funds and the standard deviation therefor

6   in determining the reliability of the first return.

1   **24.** The method set forth in claim 23 wherein the step of using the correlations in determining

2   a standard deviation of the risk for the particular allocation of funds further comprises the steps

3   of:

4   determining a standard deviation for each of the asset classes with regard to the risk;

5   and

6   using the correlations and the standard deviations for the asset classes in determining

7   covariances between the asset classes with regard to the risk; and

8   using the covariances and the particular allocation of funds in determining the standard

9   deviation of the particular allocation of funds.

1